REMARKS

Applicants submit herewith replacement sheets which formalize those drawings currently on file. No other changes have been made. Approval by the Examiner is respectfully requested.

Applicants affirm the election by the undersigned of Group 1, claims 1-19 and withdrawal of claims 20-38.

Claims 1, 3, 5-9, 11-15 and 17-19 were rejected under 35 USC 103(a) as being unpatentable over US Patent No. 6291031 to Okazaki et al in view of US Patent No. 5835678 to Li et al.

By this amendment, changes have been made to independent claims 1, 8 and 14. Claim 1 is believed to be representative of the independent claims in this case. As amended, claim 1 requires that metered fluidized powder directly contact a first heated member and such fluidized powder is vaporized. A second member is provided formed with at least one aperture in communication with the manifold.

There are significant differences between amended claim 1 and Okazaki et al. Okazaki describes a way to continuously feed fluidized powdered organic pigment at a constant feed rate onto a continuous belt that is circulated such that organic pigment is fed onto a first position of the outer surface of the belt that is oriented upward. The belt circulates to carry the powder to a second position that is also oriented upward where the powder is heated and vaporizes. Okazaki does not teach a method to directly dispense fluidized powder onto a heated member where the powder is vaporized upon contact. Instead, the device of Okazaki requires the use of a belt as an intermediate device between the powder metering and vaporizing functions. The present invention provides a significant advantage over the structure of Okazaki et al, in that the powder is metered and a stream of metered fluidized powder directly contacts a heating member. In claims 8 and 14, the heating member is porous. The arrangement of claim 1 provides the advantage of reducing contamination, and also provides a steady evaporation rate. This arrangement further provides for extended operation with reduced risk of degrading very sensitive organic materials. The Examiner should note that claim 1 further requires a manifold which is in

communication with at least one aperture that permits the vaporized material to be directed onto the surface to form a film. This arrangement provides a more uniform deposited film than does Okazaki et al.

The apparatus of Li et al provides for a liquid precursor to be first atomized into a mist using an ultrasonic nozzle, then vaporized by contact with heated, porous media discs, then mixed with a carrier gas, then forced into a Chemical Vapor Deposition (CVD) reaction chamber. The heated, porous media discs vaporize droplets. Vapor molecules exit the porous discs, not particles whose size is controlled by the discs as asserted by the Examiner.

Li et al specifically teaches the use of liquid materials and while it is broadly known that liquids are far easier than powders to dispense in precise quantities, there are substantial impediments to the use of liquid based materials such as in forming organic films in OLED applications.

Organic films formed by the method of claim 1 can be dense and extremely pure, not incorporating or containing residual solvent molecules or contaminants from the solvent. The raw organic materials are supplied in powder form after undergoing one or more purification sublimation processes to remove contaminants present during their synthesis in liquid form. OLED device lifetime has been found to decrease substantially in response to the presence of impurities in the deposited film, either from incorporated solvent molecules or from impurities in the solvent or both. For these reasons, the apparatus of Li et al. and any others where the organic material to be vaporized is delivered in liquid form is not suitable applications wherein the method of claims 1, 8 and 14 is effective.

The Examiner asserts that it would have been obvious to modify the procedure and belt apparatus of Okazaki et al. to include a liquid vaporizer system such as taught by Li et al. Because of possible contamination, it would not be productive to modify the belt apparatus of Okazaki et al. to include a liquid vaporizer as taught by Li et al. In the claimed method, none of the liquid, ultrasonic atomizing nozzle or carrier gas elements required by Li et al. are present, nor can a continuous belt as described by Okazaki et al be used. Given that Okazaki el al teach dispensing powder onto a moving belt and Li et al teach the vaporization of liquids, Applicants fail to see how a powder metering assembly of Okazaki et al could be coupled with the liquid vaporization

arrangement of Li et al. All of the independent claims 1, 8 and 14 are believed to set forth unobvious subject matter and should be allowable.

Claim 2 was rejected under 35 USC 103(a) as being unpatentable over Okazaki et al in view of Li et al as applied above, and further in view of US Patent No. 4734451 to Smith.

Okazaki et al and Li et al have been discussed above. Smith describes an apparatus where solid films or fine powders are formed by dissolving a solid material into a supercritical fluid solution at an elevated pressure and then rapidly expanding the solution through a short orifice into a region of relatively low pressure. This produces a spray of nanometer size particles that is directed against a substrate to deposit a solid film thereon, or discharged into a collection chamber to collect a fine powder. Smith does not vaporize the fine powder produced by his device to form a high-density film by vacuum thermal evaporation. He instead forms a film consisting of fine, agglomerated particles.

In the presently claimed method, organic material in a fluidized powder form is metered and directed onto a heated member where the powder is vaporized. The vapor is collected in a manifold having at least one aperture through which the vapor passes. The vapor is directed from the manifold through the aperture and onto the surface of a substrate where it forms a film. In the present specification, a rapidly expanding supercritical fluid is used as one way of generating the fluidized powder that is metered and directed on to the heated member to vaporize the powder. Smith does not vaporize metered fluidized powder.

Applicants note that the Examiner has previously indicated the allowability of claims 4, 10 and16 if incorporated into their corresponding base claims. However, it is believed that the changes to the independent claims now make them clear and definite. It is further believed that none of the references, taken singly or in combination, disclose the claimed invention. Accordingly, this application is believed to be in condition for allowance, the notice of which is respectfully requested.

If there are any problems with these changes, Applicants' attorney would appreciate a telephone call.

Respectfully submitted,

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If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.